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ABSTRACT

While the overall effect of the impact of technology on health, physical education, recreation, and dance education (HPERD) in the areas of research, classroom, teaching, and distance education is not yet fully assessable, the presence of technology in so many different aspects of the profession makes it important to more clearly recognize and appreciate its current and potential role. This digest, organized into two sections, focuses on computer-based technology as it relates to HPERD in the areas of teaching and distance education. The first section, "Classroom Utilization of Technology," discusses specialized software, multimedia and CD-ROM, computer-assisted instruction (CAI), Internet/World Wide Web, local area networks (LANs), and computers and satellites. The second section, "Next Steps for Incorporating Technology in Instruction" recommends that HPERD professionals perform an inventory of training, hardware, and software available within their own organizations; find a "techno-buddy" within the organization; and welcome students' willingness to demonstrate what they know about and what they can do with technology. Nine selected World Wide Web URLs (addresses) are included. (LL)

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USE OF COMPUTER-BASED TECHNOLOGY IN HEALTH, PHYSICAL EDUCATION,
RECREATION, AND DANCE

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by

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Use of Computer-based Technology in Health, Physical Education, Recreation, and Dance

Daniel D. McLean

Introduction

Technology impacts health, physical education, recreation, and dance educators in the areas of research, classroom teaching, and distance education. While the overall effect is not yet fully assessable, the presence of technology in so many different aspects of the profession makes it important to more clearly recognize and appreciate its current and potential role. This Digest focuses on computer-based technology as it relates to HPERD in the areas of teaching and distance education.

Classroom Utilization of Technology *Specialized Software*

The greatest value of computers may reside in the ability to provide improved support to classroom instruction, and the variety of software programs for such use continues to grow. Commercial and shareware programs are available to track grading, student athletic performance, and fitness; conduct health assessments; provide simulations of disease; and monitor research projects, among other functions. The development of individualized software is becoming more common. The availability of hypertext, where selected words in the text of a document can be used as links to other points in a document, has made such software development much easier.

A good example is the shareware package titled HPERIntern (McLean & Hill, 1993), which was created to guide college students through the process of internship development and placement. Using HyperCard, a commercially available application software based on a HyperText language, HPERIntern integrated a number of components from traditional classroom instruction and individual counseling. HPERIntern is a menu-based application that allows students to enter the information stream at a variety of points, rather than be forced to follow a predetermined path. This approach allows students to determine what they think is important rather

than what the instructor has deemed important, reinforcing students' ability to control the learning process. The result: a reduction in the amount of classroom time and individual counseling needed for internship preparation.

Multimedia and CD-ROM

Computers have integrated learning with multimedia presentations. Traditional encyclopedias and reference books have been replaced by compact discs with read-only memory (cd/rom or cd) that contain pictures, sound, and video, as well as the standard text. In the kinesiology classroom students can observe and listen to the mechanics of movement in slow motion and play over those parts they do not understand. In health education classrooms the growth of an embryo can be depicted to birth. Instructional topics remain traditional, but the delivery is nontraditional and allows the student to move at her/his own pace (Gold, 1991).

Computer-assisted Instruction

Computer-assisted instruction (CAI) provides students with an alternative to classroom settings and frees the instructor from rote processes that are better handled by the computer. Mohnsen (1995) identified a number of reasons for using CAI in physical education. Among them were suggestions that CAI provides students with the "why" behind health-related fitness; it provides unlimited practice, review, and remediation; students stay actively involved; and it meets a variety of student needs. CAI, if individually developed, requires considerable time on the part of the instructor, but this is compensated for by increased learning time available in the classroom. Using CAI an instructor can develop or acquire a series of supportive and reinforcing software. For example, students in a nutrition class might participate in a CAI-based eating habits survey that provides students with information about their nutritional habits, collates data for the entire class, and provides the teacher with a report to use as a teaching tool.

Internet/World Wide Web

The expansion of the Internet (a government-sponsored electronic network) to nondefense-related uses has caused an explosion of communications. The World Wide Web (WWW) is that part of the Internet supporting graphics, audio, video, and hypertext links (the ability to connect from one computer site to another), as well as standard text. Access to the Internet, combined with the development of commercial network providers (e.g., America OnLine, Prodigy) has allowed individuals, schools, and organizations to communicate with each other and to share information through mechanisms such as e-mail, telnet, ftp (file transfer protocol), gopher, and WWW.

More recently, user-friendly navigator application software has become available for the WWW. Software such as NetWare, Netscape, and Mosaic have opened the Internet to a new and diverse market place. From the convenience of the classroom a student or teacher can, using a computer and a modem, log into a variety of sites throughout the world.

For example, several dozen medical schools, such as the University of Iowa and Johns Hopkins University, are now on the WWW and provide excellent information as well as videos of various human systems in operation. Students can be exposed to a video of a working heart and even create specific heart problems. Students may see a working heart with a dynamic chart that illustrates heart efficiency (amount of blood pumped per minute). By clicking on a fat-blocked heart, students watch heart efficiency drop dramatically. The students, engaged in the process now, click on the aorta to see an enlarged view a healthy and a fat-clogged aorta. Next the student clicks on the clogged aorta and receives a written or verbal description of how the heart got this way and its potential impact on the owner. Students can take notes and copy the pictures to a notebook that is built into the program and, when done, can download and print the notes.

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A number of WWW sites relate to sports, fitness, health, and recreation. A home page is a starting point for exploration into a given host site's resources and connections to other sites. ERIC maintains the AskERIC Virtual Library home page, which provides a gateway to ERIC information, including lesson plans and "infoguides" on relevant topics. Health and recreation pages are very common. The Whole Internet Catalog offers a section on health and includes such topics as substance abuse, safer sex, mental health, and nutrition. Yahoo, organized similarly to the Whole Internet Catalog, is the source for numerous different starting points for investigation into health and recreation. The International Food Information Council Foundation is an excellent source for nutrition-related topics.

Indiana University's Prevention Resource Center home page links to a broad spectrum of health-related resources from government and private sources. Bradford Woods Outdoor Center is an example of a university-supported home page related to recreation and the outdoors. Sports home pages provide information on a variety of topics related to professional and college sports. However, fitness and physical education is not well represented on the Internet.

Local Area Networks

The development of local area networks (LANs) allows computer users to communicate with each other without leaving their location or without the need of a telephone conversation. A LAN provides a physical link between several personal computers and a mainframe or minicomputer (White, 1993). In some instances paperless classrooms have been developed using the LAN as a communications base. A paperless classroom allows student to submit work via a computer to a central location where it is

graded by the instructor and then returned to the student's electronic mailbox. The advantages of this include speed with which one can respond, always having a copy of the students' papers, timeliness, and increased comfort with software packages that students may frequently use.

Computers and Satellites

Classrooms around the world can now be connected using technologies that include computers, interactive television, satellites, and the Internet. The linking of computer technology through the use of the Internet or cd/rom with television transmission provides a new dimension to distance education. This technique has been used to link university professors to high school teachers, physically disabled students, and other students who are all physically distant from each other.

Next Steps for Incorporating Technology in Instruction

First, HPERD professionals need to perform an inventory of training, hardware, and software available within their own organizations. There may be many existing resources of which professionals are simply unaware. In addition, it may help to find a "techno-buddy" within the organization whom the HPERD professional can ask for help and share information about successful technology undertakings. And, finally, with the upsurge in technological competence seen in young people, professionals should welcome students' willingness to demonstrate what they know and can do with technology. This may be an excellent opportunity for the teacher to learn from the student.

Selected World Wide Web URLs (addresses)

Apple Virtual Campus—
<http://hed.info.apple.com>

AskERIC Virtual Library—
<http://ericir.sunsite.syr.edu>

Bradford Woods Outdoor Center—
<http://www.indiana.edu/80/~bradwood/>

Indiana University's Prevention Resource Center—
<http://www.drugs.indiana.edu>

International Food Information Council Foundation—
<http://ificinfo.health.org/>

Johns Hopkins Medical Institutions Information Network—
<http://cwis.welch.jhu.edu/>

University of Iowa Virtual Hospital—
<http://vh.radiology.uiowa.edu/>

Whole Internet Catalog—
<http://nearnet.gnn.com/wic/index.html>

Yahoo—
<http://www.yahoo.com>

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2 Educational Resources Information Center (ERIC) is a nationwide information system initiated in 1966. It is funded by the U. S. Department of Education. ERIC is the largest and most frequently used education database in the world.